Networks in Manuel Castells' theory of the network society

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Abstract

This paper discusses the conceptualization of network in Manuel Castells' theory of network society. Castells' early academic works were built on the structural analysis of capitalism and social movements in response to the contradictions of capitalist society, without any explicit connection to network analysis. Networks gradually appeared in Castells' works in the late 1980s, when he became interested in the configuration of the relationships between technology, economy, and society. The culmination of this phase was his *opus magnum*, *The Information Age* trilogy, which introduced network as a key concept of his macro theory, even though he remained laconic about the concept itself. This is paradoxical, for Castells became possibly the most prominent figure globally in adopting network terminology in macro sociological theory, but at the same time made hardly any empirical, theoretical or methodological contribution to social network analysis or network theory in general. This implies that 'network' in Castells' social theory is not an analytical concept but rather a powerful metaphor that served to capture his idea of the new social morphology of late capitalism.

Keywords: Manuel Castells, network, network society, The Information Age, social theory

Introduction

The Spanish sociologist Manuel Castells created one of the most ambitious macro theories of our time, which endeavors to explain and interpret power, economy, and social life in a world transformed by globalization and informatization. Castells already rose to fame as a radical urban sociologist in the 1970s, but his international reputation is largely due to *The Information Age* trilogy published in three volumes in the latter half of the 1990s. This is a political economy-oriented macro-analysis of the tensional relationship between the instrumental networks of informational economy and historically-rooted identities and the world-wide developments conditioned by it. The concept of network entered his thinking in the late 1980s, culminating in the first volume of the trilogy, *The Rise of the Network Society* (Castells, 1996).

In this article I discuss the nature and role of the concept of network in Castells' theory of network society. The research question is: how does Castells operationalize and utilize the concept of network in his analysis of the network society? I first contextualize the discussion by briefly shedding light on the most significant events of Castells' academic career. The discussion then turns to introducing the concept of network and its role in his macro sociological theorization. Lastly, I position Castells in the field of social network analysis and assess his contribution to network theory.

Turning points of Castells' academic career

Manuel Castells Oliván was born in 1942 to a conservative family in the small town of Hellín in the autonomous region of Castilla-La Mancha in Spain. He spent most of his childhood in Barcelona, where he also started his university studies in the late 1950s. The life of Spanish people was shadowed at that time by Franco's military regime. The young Castells like many others participated

in the opposition movement. When the grasp of the military government tightened, many of Castells' friends were captured and tortured; he himself was able to escape to France. (Castells and Ince, 2003: 5-9; Fischer, 1999; see also Castells, 2009).

Castells settled in France and graduated from the University of Paris (la Sorbonne) in 1964. He was interested at that time in conducting sociological analysis of the working class, an interest shared by the famous French sociologist, Professor Alain Touraine, who eventually became Castells' academic mentor (Castells and Ince, 2003: 10-12; see also Stalder, 2006). In 1967 Castells took his doctoral degree and was soon nominated as an associate professor in sociology at the University of Paris (Castells and Ince, 2003: 12-13). Due to his involvement in the 'May 68' movement he was deported from France. After being granted an amnesty by the French government, he was able to return in 1970, this time at the invitation of Touraine to hold an associate professorship at EHESS in Paris (*L'École des hautes études en sciences sociales*). This was the beginning of the gradual consolidation of his position in French and slowly also in international circles of urban sociology. (Castells and Ince, 2003: 15-16; Stalder, 2006.)

Academically, Castells' main objective became to combine Marxist theory, urban sociology and social movement research, the focus being on empirical research. The most important outcome of that period was *La question urbaine,* which was published in 1972 and translated into English five years later under the title *The Urban Question* (Castells, 1977). The book was a great success both in France and internationally, providing considerable input to Marxist urban sociology (Castells and Ince, 2003: 15-16; Castells, 1977; 1978; see also Pickvance, 1975; Rex, 1977; Dunleavy, 1977; 1980; Elliott, 1980; Whiteley, 1980; Lowe, 1986; Gurr and King, 1987; Katznelson, 1992; Walton, 1993; Merrifield, 2002). Probably the most widely discussed issue around this work was the conceptualization of the city as the arena of collective consumption. The message of Castells'

structural analysis was that political contradictions escalate unless they are eased by publicly organized and funded collective consumption that meets people's basic needs (Castells, 1977; Lowe, 1986: 2; see also Dunleavy, 1980; Lojkine, 1976; De Moura Costa, 2007: 23; Cochrane, 2003: 531).

The American universities had impressed Castells since the early years of his career. He even said that his own research orientation was more American than French, even though he clearly combined the empirical analysis typical of the American tradition with the theorization associated with the French tradition and the political activism that reflects his Spanish background (Castells and Ince, 2003: 16-17; Institute of International Studies, 2001). Castells' reputation as a radical reformer of urban political analysis became widely known among urban researchers. Yet his reliance on Marxism began to decline in the late 1970s and by the end of the decade had vanished (Rantanen, 2005: 137). That was the time when Castells' academic career took a new turn as he was invited to take up a professorship of urban sociology at UC Berkeley, USA. He was appointed in 1979, at the age of 37. He started to pursue his intellectual passion, research on social movements, but this time in the socially diverse San Francisco (see Castells and Murphy, 1982). The culmination of this period was *The City and the Grassroots*, published in 1983, which Castells himself regarded as his best work in urban studies (Castells, 1983: 291-301; Castells and Ince, 2003: 16-17; Fuchs, 2008; Mayer, 2006).

Around the year 1983 Castells decided to start investigating the connection between technology, economy, and society and how these were reflected in urban structure (e.g. Castells, 1985; 1989; Portes et al., 1989; Mollenkopf and Castells, 1991). He later stated that at that time he felt that in Europe the magnitude of the information technology revolution had not yet been understood as it was on the other side of the Atlantic (Institute of International Studies, 2001; Stalder, 2006; cf. Hydén, 2001). The first major outcome of this new turn was *The Informational City*, a book that opened up a new contextual view of urban reality by paying attention to the geographical impacts of informational

economy (Castells, 1989). Castells had earlier emphasized in his urban analyses both productive relations (Castells and Godard, 1974) and consumption processes (Castells, 1977), but now broader exchange, interaction, and communication processes and spaces were taken into the spotlight (Castells, 1989; 2002; Stalder, 2006; 1998; cf. Hassan, 2004: 59). Later the project expanded into an encyclopedic endeavor resulting in the trilogy entitled *The Information Age*, its three volumes being *The Rise of the Network Society* (1996), *The Power of Identity* (1997a), and *End of Millennium* (1998). The trilogy was essentially a crystallization of Castells' ideas developed throughout the previous decades, augmented by the ample evidence he needed to be able to present a grand narrative of the structural contradiction between the Net and the Self that characterizes the world we live in. The trilogy became a huge success and confirmed Castells' position as one of the most cited social theorists worldwide. (Institute of International Studies, 2001; Castells and Ince, 2003: 18-20.)

After retiring from his professorship in UC Berkeley in 2003, Castells accepted a professorship of communication in the prestigious Annenberg School for Communication and Journalism at the University of Southern California, Los Angeles. Castells approached communication in the context of societal changes and power structures, which reveals an unbroken connection with his earlier works (cf. Waterman, 1999; see also Kling, 2002; Howard, 2011; Allan, 2007). A cornerstone of this turn was *Communication Power*, which the media analyst Jan van Dijk (2009) has described as the extension of the discussion presented in the second volume of the trilogy, *The Power of Identity*. (Castells, 2009; on other contributions of Castells' late career, see Carnoy and Castells, 2001; Castells, 2001; Castells et al., 2004; Castells, 2007; Arsenault and Castells, 2008a; 2008b). We may add to this one of his more recent works, *Networks of Outrage and Hope: Social Movements in the Internet Age*, which illuminates how he fuses his earlier works (e.g. Castells, 1983; 1998; 2001) into an insightful analysis of recent social conflicts from the Arab Spring to the Occupy Wall Street movement that are in the spotlight of global news (Castells, 2012).

Castells' academic career and major research topics of different periods are illustrated in Figure 1.

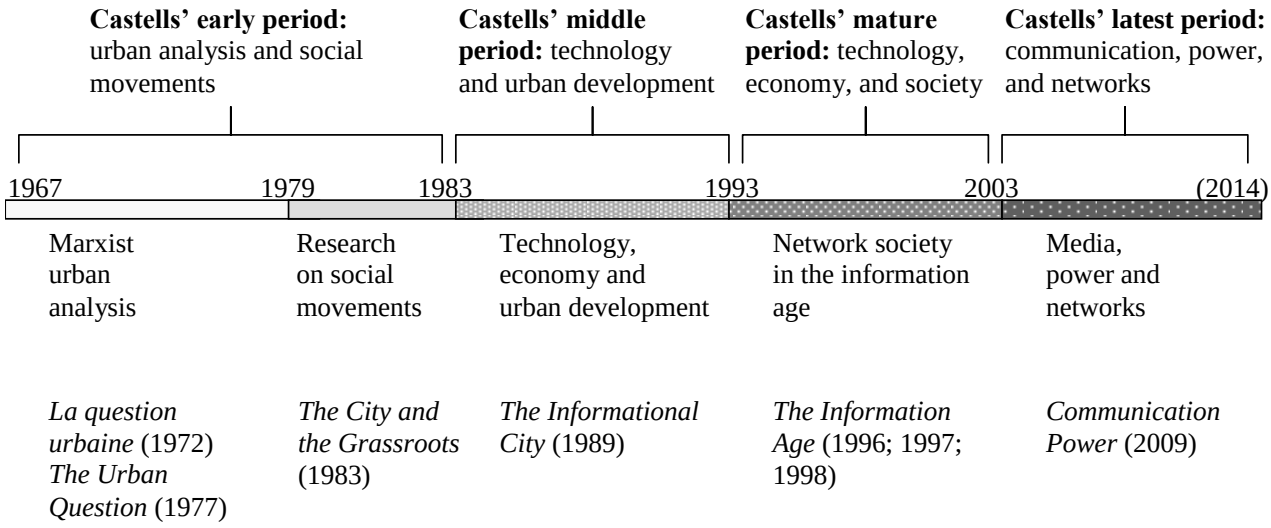

Figure 1. Main phases of Castells' academic career.

Next I will take a closer look at Castells' concept of network and after that assess its use in his analysis of the network society.

The concept of network in Castells' theorization

Introduction of networks in The Informational City

In the light of the Marxist influence it is understandable that the concept of network did not notably figure in Castells' works of the 1970s. His approach changed in the 1980s, and more so in the following decade, however, as he started to renew his conceptual arsenal. The first significant attempt to clarify the network logic within a wider theoretical framework was *The Informational City*, which can actually be seen as the first sketch of *The Information Age* trilogy. Even if it included only a few direct references to networks, the concept itself aptly described something fundamental in

the emerging social morphology and related changes in the techno-economic system. Castells (1989: 32) writes,

> "These networks, which could not exist on such a large scale without the medium provided by new information technologies, are the emerging organizational form of our world, and have played a fundamental role in ensuring the restructuring process: ---".

In the analysis presented in *The Informational City* 'network' remained an auxiliary concept subject to the structural framework, having only a modest role in the account of informational capitalism, at least if measured by explicit references to the concept. It started to resonate later in *The Information Age*, however, as a depiction of the organizational logic which relates dialectically to the informational mode of development as an enabler and globalization of the economy as the indication of the transformation of the material base of social life (Castells, 1996; 1997a; 1998).

Networks as sets of interconnected nodes

In *The Information Age* and many subsequent works Castells defines 'network' explicitly as a set of interconnected nodes of which he mentions such examples as stock exchange markets and their ancillary centers of advanced financial services in the network of global financial flows; political elites in political networks, such as national councils of ministers and EU commissioners in the governance network of the European Union; broadcasting systems, studios, computer-aided communications, social network service providers in the global network of media, and so forth (Castells, 1996: 470). By definition, networks do not have one center but are characterized by binary logic (inclusion/exclusion) and decentralized structures and decision-making patterns. The existence of networks is determined by the utility of the nodes of the network. If some node ceases to serve the

network, it will be phased out or replaced and the network rearranges itself in the manner of cells in biological processes. The importance of each node is determined by its ability to gain trust within the network by sharing information and to program and connect networks by mastering protocols which enable the operation of the critical switches of the network (Castells, 1996: 470-471; 2000a; 2000b; 2009; Stalder, 2006: 135-136).

Such a formal view derives its rationality from the fact that the network concept was adjusted to a broader structural framework. The introduction of this concept was not motivated by its distinctiveness or content as such, nor did it include any particular methodological contribution, but rather served as a kind of historically grounded epochal "axiom" in a social theoretical deduction from general theoretical principles to the explanation of empirical phenomena, such as new business models, urban conflicts, or state restructuring (Castells, 1996; 1997a; 1998). In this sense we may say that the concept of 'network' was subordinate to structural framework and its deductive logic. Castells' insightful idea was to use the global networks of instrumental exchanges as a point of reference to the notion of network. He does not seem to be puzzled by how networks come into being, how they evolve, the nature of given network ties, or even how the information networks really function, but provides only a formal definition and a few sketchy examples, which keeps the discussion at a high level of abstraction (Castells, 2000a; 2004a).

Castells assumes that technological development is the most important individual precondition for the resurge of networks (Castells, 1996; 2004b; Fuchs, 2009). He supports his view with a claim that the emergence of networks as an efficient form of social organization is the result of three features that have proved their usefulness in the emerging techno-economic environment, namely flexibility, scalability and survivability (Castells, 2004a: 5-6; cf. Castells, 2009: 23):

> "Flexibility: they can reconfigurate according to changing environments, keeping their goals while changing their components. They go around blocking points of communication channels to find new connections. Scalability: they can expand or shrink in size with little disruption. Survivability: because they have no center, and can operate in a wide range of configurations, they can resist attacks to their nodes and codes, because the codes of the network are contained in multiple nodes that can reproduce the instructions and find new ways to perform."

To summarize, Castells (2004a; 2009) defines networks as sets of interconnected nodes, which process financial and other value flows with the help of new technologies. They are self-configurable, complex structures of communication and power, which cooperate and compete internally and externally according to interests expressed within the nodes using ultimately a binary logic of inclusion/exclusion. They have the capability of self-renewal in the sense that they may introduce new actors and content as conditions change. Their dynamic nature makes them flexible, scalable and survivable, which are needed in continuously changing techno-economic environment. (Castells, 1996; cf. Tampere, 2011).

Binary logic of informational capitalism

Castells' theory of network society takes the concept of network to a high level of abstraction, utilizing it as a concept that depicts macro level tendencies associated with the social organization in informational capitalism. He expressed the role of networks in his social theory as follows (Castells, 1996: 469):

> "… dominant functions and processes in the information age are increasingly organized around networks. Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture. While the networking form of social organization has existed in other times and spaces, the new information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure."

Understanding the societal context of such networks entails returning to the political economy of the social transformation of capitalist society. Initially, as an evocation of his Marxist roots, Castells repeatedly emphasized that the network society is a capitalist society. In fact, for the first time almost the entire globe can be said to function under the conditions of the capitalist system (Castells, 2000a). The most central tension of such a societal formation is that between capital and labor, as depicted in Karl Marx's thesis of the in-built contradiction of capitalism. According to Castells, a key contradiction critical to understanding informational capitalism is the historical asymmetrization of the capital-labor relationship: while capital creates networks, labor becomes individualized (Castells, 1996: 471; 1997b).

Informational capitalism works through global networks of instrumental exchanges. As they process flows within the fluid "space of flows," relationships surpass places in importance in the functioning of the system. The other side of the equation, waged labor, became historically united against capital in the form of the labor movement from the late 19th century onwards. Disillusionment with socialism, the anomalies of Marxist doctrine and real-life developments in advanced democracies caused the inevitable evanescence of the subject of revolution. Castells, like many of his post-Marxist contemporaries, called for a more subtle and nuanced interpretation of the conditions and agenda of social change. The most serious attempts to restore the actorship behind radical social

change have rested on social and ecological movements and more broadly on civil society (Kling and Posner, 1991: 30; see e.g. Wright, 1997; 2005; Katznelson, 1981; Marcuse, 1964). Castells sought individual and community-level awareness, adaptability and innovativeness in a pluralist society without committing to any ideologically fixed manifesto or political program (Institute of International Studies, 2001; cf. Waterman, 1999; Boyraz, 2008; Rantanen, 2005). Thus the analysis of the network society did not aim at providing a formula for the working class to solve the contradiction between capital and labor, but rather at opening up new horizons to understand our social conditions and to challenge global instrumentality through bottom-up strategies developed by people who ultimately rely on the power of their locally-rooted socio-historical identities.

Macro level network logic comes into this picture in Castells' dramatic claim that individuals, groups, communities, and even nations are included in or excluded from the networks of economic power depending on their usefulness to such networks. The processes of human life are increasingly conditioned by global economic networks that position people according to their "use value" and create sophisticated means of controlling everyday life. This creates tension, which Castells (1996, 3) expressed in one of the most widely quoted crystallizations of his theory: "Our societies are increasingly structured around a bipolar opposition between the Net and the Self." Hence the emancipatory message built into Castells' theory and the related special nature of "power of identity" as counterforce to instrumental networks.

From neuropolitics to general network theory

The most recent phase of Castells' academic career has been devoted to the analysis of communication, power, and networks. Even if he adheres to topics elaborated in his earlier works, his interest in micro sociology gained ascendancy. According to van Dick (2009), Castells' main

work in this area, *Communication Power*, illustrates the change of his thinking in two respects. First, tying the analysis to self and identity is not as superficial as it was in *The Information Age*, but developed a firmer psychological foundation for understanding social action. In this he relies on neuroscience, as exemplified the works of Professor Antonio Damasio (1994) of the University of Southern California, who has contributed to shifting the center of gravity in the analysis of human behavior from cognition and rationality to biology and emotions (cf. Kelly, 1994). We may identify similar aspirations in Castells' attempt to apply Robert Entman's (1993) frame theory in analyzing power in communication. Another important departure from Castells' earlier approach was to take the internal power struggles of networks onto the agenda, which in his earlier works were only mentioned in passing (van Dijk, 2001; 2009). Fascination with micro sociological explanatory schemes began to profoundly affect Castells' thinking (see Castells, 2009).

In Castells' analysis network appears as a central structural element in the new forms of communication and in a mediatized society in general, which is manifest in the "mass self-communication" associated with social media, in the environmental movement's contribution to mitigate climate change, and in neuropolitics, which analyzes power through cognitive processes (Castells, 2009; cf. Castells, 2012). He became particularly interested in biological analogies and neuroscience, which tries to explain how political affiliation and action relate to the human brain (e.g. Lakoff, 2008). Castells ended up with a notion that as conscious actors we resemble organic networks with a connection to the external world of networks (Delfanti, 2009). From that assumption it is only a short step to a general network theory, which makes sense of the material, psychological, and social aspects of our world, serving as a unifying framework for the natural sciences, humanities and social sciences in the same way as general systems theory or complexity theory were assumed to do (Castells, 2009; 2010).

Castells' micro-sociological excursions have been criticized for making an excessively simplistic use of the results of brain research to explain complex phenomena, such as power and politics. It is also worth asking how useful the network metaphor actually is when taken to its extreme, i.e. to explain practically everything, as Castells eventually seems to do (see Delfanti, 2009; Stalder, 2006; Thompson, 2003: 192). This raises an interesting question of the relation between macro and micro in Castells' theorization. The concept of network has allowed Castells to maintain his macro sociological framework while deepening his analysis along micro-sociological lines.

Castells placed great faith in the network theory, proposing that it may even offer a unifying language and framework to understand nature and human society through the networks of biological, neurological, digital, and human communication (Castells, 2010). While for understandable reasons he maintained his belief in his theory of network society, his recent views of the role of networks in social research would require the refinement of the fundamentals of his theory. Such an endeavor is akin not only to the previously mentioned micro-sociological endeavors (Damasio, 1994; Kelly, 1994; Entman, 1993; Lakoff, 2008) but also to complexity theory and the related new network conceptions, as represented by Capra (2003) and Barabási (2002). This is a methodological project which Castells touched upon in *Communication Power* and referred to in some of his speeches (e.g. Castells, 2010) but which he obviously did not set himself to complete.

Castells in the field of network research

Castells is a social theorist, whose influence is perceptible in various academic and social discourses of our time (McCarthy et al., 2004; May, 2006; Barney, 2004: 181). His trilogy in particular introduced a long awaited social theoretical perpective on the understanding of the trends and challenges of global transformation (Fuller, 2004; Giddens, 1996; Cabot, 2003; Heiskala, 2003). If

we take the concept of network to be the core of his analysis, however, the picture changes in some respects. Namely, paradoxically Castells' influence is minimal in network research even though his network society theory is one of the most widely discussed social theoretical contributions of the 1990s.

Social network analysis

Castells' theorization is not imbued by references to social anthropologists who have studied social ties (e.g. Alfred Radcliffe-Brown and E.E. Evans-Pritchard), sociological classics that contributed to the network-oriented analysis of social structures and interaction (Georg Simmel, Leopold von Wiese, Norbert Elias, Herbert Blumer) or later generations of scholars who have developed social network analysis, including J. Clyde Mitchell, Harrison White, Michael Schwartz, Barry Wellman, and Mark Granovetter (on the sociology of social networks, see Freeman, 2004; Pescosolido, 2006; Borgatti et al., 2009). In its basic form social network analysis focuses on the interaction of small groups and dyadic relationships (Granovetter, 1973; 1983), which are not addressed in Castells' analysis. He conceptualized "social ties" as imprecise impersonal exchange relations at a theoretically constructed whole-network level, relying on benefit-based antecedents or the utility maximization view of network formation as a reflection of instrumentality built into the logic of the capitalist system. While directing attention one-dimensionally to the formal features of network-based organization, he eventually totally excluded 'social interaction' from his network analysis.

Another noteworthy point is that in his analysis the economic sphere had a critical role as the primary locus of the network society, which is a fairly narrow slice of network theory as a whole. In this sense similarities with Castells' network conception could be sought from economic network analysis – the best known representatives of this approach being Christopher Freeman, Eric von Hippel and Paul

DiMaggio – and within it especially from an approach in which the proliferation of networks is associated with technological and economic development. More precisely, Castells' network concept represents macro-theoretically oriented economic network analysis (Castells, 1996; 2000a; 2000b; 2010).

If Castells overhauled the traditions of the social network analysis lightly, it is not surprising that his network concept remained too sketchy for the network analysts. Castells' contribution to social research is not based on the sophistication of the network concept *per se*. Network society theory attracted attention because it afforded a rich perspective on societal change in which network was a social theoretical metaphor rather than an analytical concept. Be that as it may, social scientists who analyze network society at the macro-theoretical level have inevitably benefited from Castells' seminal work, which paves the way for a better understanding of the emerging forms of the social organization of society and their structural conditions (e.g. Barry, 2001; Thompson, 2003; Barney, 2004; Lehmann et al., 2007).

Network society theorizations

If we discuss the concept of 'network' at a higher level of abstraction, within macro sociology or political economy, Castells' contribution gains currency. In the 1970s the center of gravity of network research in general shifted to sociology (Borgatti et al., 2009). Along with this shift network society theorizations emerged as a reflection of the increased complexity and interactivity occasioned by the digitalization, informatization, and mediatization of society (Craven and Wellman, 1973; Wellman, 1979; Hiltz and Turoff, 1978; Martin, 1977; see also van Dijk, 1999). Other contributions to this field came from discussions about post-industrial society (Bell, 1973; Kumar, 2005), various strands of information and knowledge society discourses (Webster, 1995; Stehr, 1994), theorizations

of reflexive or late modernity (Giddens, 1992; Beck et al., 1994; Lash and Urry, 1994), and insightful views in futures research (Toffler, 1970; 1980; 1990; Naisbitt, 1984) to mention just a few prominent discourses that relate to network society theorizations.

Castells did not strongly relate his discussion to any theoretically-oriented sociological tradition, nor did he discuss these in his *opus magnum* (Iyer, 1999; cf. Collins, 1999; Smart, 2000; Holton, 2005) but set his own agenda. Most notably, he rejected the concepts of information and knowledge as primary explanatory categories and assigned such a role to networks. He made network a basic unit of analysis, which integrated social structures, social action, social organization, space of flows, and new technologies into a macro theoretical framework that utilizes quasi-Marxist ideas, such as the informational mode of development. With this solution he contributed to the wider acceptance of the concept of network as an interpretative norm in social sciences (Kasvio, 2005; May, 2006; Stalder, 1998). (On the network society analyses published after Castells' trilogy, see Schiller, 2000; Thompson, 2003; Barney, 2004; Hassan, 2004; McCarthy et al., 2004; Castells and Cardoso, 2005; Lehmann et al., 2007; Cardoso, 2007). Networks have undoubtedly been emphasized in economy and society long before Castells (see Bridge and Watson, 2003: 107), but none of the earlier works used network as the basic category of the analysis of capitalist system as Castells did in his theory.

Discussion

The Information Age does not critically analyze the themes it covers, why references to alternative approaches, theories and concepts remain superficial or mostly non-existent (Iyer, 1999). The thematically broad agenda of the trilogy actually includes quite a lot of conclusions which cannot be derived from the given premises, claims that are somewhat simplistic, and generalizations that are too bold. Moreover, Castells' affinity with novel, emerging forms of social life increases the

sketchiness and the imprecision of his generalizations (Barney, 2004). On the other hand, in numerous evaluations of his trilogy Castells is usually unquestioningly applauded for identifying the profound social trends and their inter-relationships and for describing them with illustrative concepts that are incorporated into his social theoretical framework (Giddens, 1996; Wilenius, 1998; Fischer, 1999; Heiskala, 2003).

Castells uses network as a theoretical concept that refers to the general form of social organization and development, which can be best referred to as a network metaphor as it lacks explanatory accuracy and analytical depth concerning the dynamics of networks. As an analytical concept network is abstract, and thus unable to frame the interpretation of real-life networks, whereas as a theoretical concept network is actually an excellent crystallization of the social morphology of informational capitalism. As an upshot of the latter, the concept of network society has a certain intellectual appeal, even if it looks almost as if the formal description of the concept of network was needed only to legitimate its use as a metaphor. Concerning the hard core of the metaphor, we come to the true message of Castellsian political economy: the network in its paradigmatic form is about the nodes and connections of multinational corporations and powerful financial and economic institutions that process flows of values in pursuit of the accumulation of capital. Such networks of instrumental exchanges are challenged by social movements and people with their historical and locally-rooted identities, which are a source of genuine human meaning as opposed to global instrumentality. Hence the fundamental tension between the Net and the Self. Such a view echoes Castells' early adherence to Marxist analysis, even if purged of ideological fixities.

Castells built an insightful analysis, which was seemingly affected by a soft version of technological determinism. It was, however, surpassed by structurally oriented social determinism as evidenced by the "axiomatic" use of network. Concerning the interplay of these two forms of determinism, it is

worth noting that in the 1990s, when new technologies penetrated developed countries and appeared to shape all aspects of capital accumulation and professional and everyday life, the use of informationalism and network logic to explain novel phenomena started to produce diminishing returns. The explanatory scheme that appeared to work well with the macro theoretical analysis in *The Informational City* and *The Information Age* trilogy at a later stage became disruptive when more nuanced analyses of social reality were clearly needed. As aptly pointed out by Harris (2010: 409) in his review of *The Internet Galaxy*, the book in question offers a distinctive antidote to the teleology and hype on Internet and ICTs but,

> "... stops short of explaining the consequences of these technologies in purely 'political' terms, relying instead on the network metaphor to unravel the complexities and contradictions of the digital age."

In the same vain, to explain what Castells wanted to explain in *Networks of Outrage and Hope* would have required a more nuanced understanding of the Internet and social media in everyday life, as pointed out by Barassi (2013) and Fuchs (2012). Castells perceives protest movements essentially as autonomous communication networks supported by the Internet and wireless communication irrespective of the actual penetration, use, and significance of ICTs in the given real-life setting. Likewise, if everything from Facebook to protests in the streets of Seattle or New York to an interconnected stock market system is explained in terms of network logic, the ability to accurately account for their emergence, forms, and operations becomes questionable. In such analyses the metaphorical use of the concept of network appears to be a social counterpart of technological determinism with less and less relevance as a conceptual tool.

Epilogue

The point of departure of Castells' intellectual conviction was Marxist urban sociology, which over the years developed into a social critique of the network society. Networks came into the picture as late as in the latter half of the 1980s, when Castells devoted himself to the macro-theoretical analysis of the relationship between technology, economy, and society, which culminated in the breakthrough trilogy, *The Information Age* (Castells, 1996; 1997a; 1998). At this point the critical role of networks for social theory became apparent. Castells came to the conclusion that the concept of information society should be replaced by the notion of network society. This solution did not necessarily go from bad to any better, as pointed out by Kasvio (2005), but showed in any case how Castells distanced himself from conventional information society theories and the sociology of knowledge.

The deficiencies of the conceptualization of network do not mean that we are dealing with a house of cards, however. Castells' theory of network society serves as a long awaited structural framework for understanding contemporary societies in a globalized world. It is a source of inspiration for those wishing to develop ideas for institutional renewal and contextualize the aspects of living in the global. It paints a rich picture of contemporary society which in the spirit of C. Wright Mills' (1959) sociological imagination helps to conceive of ourselves as humans in a rapidly changing world capable of making sense of our lives and resisting the pervasive instrumentality exuded from the pores of global informational capitalism.

References

Allan S (2007) Citizen Journalism and the Rise of "Mass Self-Communication": Reporting the London Bombings. *Global Media Journal – Australian Edition* 1:1, 1-20. Available at: http://www.hca.uws.edu.au/gmjau/archive/iss1_2007/stuart_allan.html (accessed 9 July 2011).

Arsenault A and Castells M (2008a) Switching Power: Rupert Murdoch and the Global Business of Media Politics. A Sociological Analysis. *International Sociology* 23(4): 488-513.

Arsenault A and Castells M (2008b) The Structure and Dynamics of Global Multi-Media Business Networks. *International Journal of Communication* 2: 707-748.

Barabási A-L (2002) *Linked. The New Science of Networks*. Cambridge, MA: Perseus Publishing.

Barassi V (2013) Review – Networks of Outrage and Hope. *E-International Relations*, Feb 27, 2013. Available at: http://www.e-ir.info/2013/02/27/review-networks-of-outrage-and-hope/ (accessed 16 August 2014).

Barney D (2004) *The network society*. Cambridge: Polity Press.

Barry A (2001) *Political machines: governing a technological society*. London: Athlone Press.

Beck U, Giddens A and Lash S (1994) *Reflexive Modernization. Politics, Tradition and Aesthetics in the Modern Social Order*. Cambridge: Polity Press.

Bell D (1973) *The Coming of Post-Industrial Society. A Venture in Social Forecasting*. New York: Basic Books.

Borgatti SP, Mehra A, Brass D and Labianca G (2009) Network Analysis in the Social Sciences. *Science* 323(5916): 892 – 895.

Boyraz C (2008) Book Review - The Information Age: Economy, Society and Culture Vol: I-II-III by Castells. *International Journal of Social Inquiry* 1(2). Available at: http://www.socialinquiry.org/articles.asp?id=31 (accessed 20 July 2011).

Bridge G and Watson S (2003) City Economies. In: Bridge G and Watson S (eds) *A Companion to the City*. Oxford: Blackwell.

Cabot JE (2003) The information age; Manuel Castells; the rise of the network society. *Research Policy* 32: 1141-1162.

Capra F (2003) *The Hidden Connections. A Science for Sustainable Living*. London: HarperCollins. Flamingo.

Cardoso G (2007) *The Media in the Network Society: Browsing, News, Filters and Citizenship*. Lisboa, Portugal: CIES - Centre for Research and Studies in Sociology. ISCTE.

Carnoy M and Castells M (2001) Globalization, the knowledge society, and the Network State: Poulantzas at the millennium. *Global Networks* 1(1): 1-18.

Castells M (1977) *The Urban Question. A Marxist Approach*. From original work La question urbaine (1972, 1976) translated by Alan Sheridan. London: Edward Arnold.

Castells M (1978) *City, Class and Power*. London: Macmillan.

Castells M (1983) *The City and the Grassroots: A Cross-cultural Theory of Urban Social Movements*. Berkeley: University of California Press.

Castells M (1985) High Technology, Economic Restructuring, and the Urban-Regional Process in the United States. In: Castells M (ed) *High Technology, Space, and Society*. London: Sage.

Castells M (1989) *The Informational City. Information Technology, Economic Restructuring, and the Urban-Regional Process*. Oxford: Blackwell.

Castells M (1996) *The Rise of the Network Society*. The Information Age. Economy, Society and Culture, Vol. I. Oxford: Blackwell.

Castells M (1997a) *The Power of Identity*. The Information Age. Economy, Society and Culture, Vol. II. Oxford: Blackwell.

Castells M (1997b) An Introduction to the Information Age. *City* 2(7): 6-16.

Castells M (1998) *End of Millenium*. The Information Age. Economy, Society and Culture, Vol. III. Oxford: Blackwell.

Castells M (2000a) Materials for an exploratory theory of the network society. *British Journal of Sociology* 51(1): 5–24.

Castells M (2000b) Toward a Sociology of the Network Society. *Contemporary Sociology* 29(5): 693–699.

Castells M (2001) *The Internet Galaxy: Reflections on the Internet, Business and Society*. Oxford: Oxford University Press.

Castells M (2002) Local and Global: Cities in the Network Society. *Tijdschrift voor Economische en Sociale Geografie* 93(5): 548–558.

Castells M (2004a) Informationalism, networks, and the network society: a theoretical blueprint. In: Castells M (ed) *The Network Society: a cross-cultural perspective*. Northampton, MA: Edward Elgar, pp. 3-7 & 36-45.

Castells M (2004b) Afterword: Why networks matter? In: McCarthy H, Miller P and Skidmore P (eds) *Network Logic. Who governs in an interconnected world?* Demos Collection, issue 20. London: Demos. Available at: http://www.demos.co.uk/files/File/networklogic17castells.pdf (accessed 23 March 2011).

Castells M (2007) Communication, Power and Counter-power in the Network Society. *International Journal of Communication* 1: 238-266.

Castells M (2009) *Communication Power*. New York: Oxford University Press.

Castells M (2010) *Introduction in International Seminar on Network Theory: Network Multidimensionality in the Digital Age, February 19, 2010*. The Annenberg Networks Network (ANN), University of Southern California. YouTube video, available at: http://www.youtube.com/watch?v=vDh7eGJwhwg (accessed 22 March 2011).

Castells M (2012) *Networks of Outrage and Hope: Social Movements in the Internet Age*. Cambridge: Polity Press.

Castells M and Cardoso G (eds) (2005) *The Network Society: From Knowledge to Policy*. Washington, DC: Center for Transatlantic Relations, The Paul H. Nitze School of Advanced International Studies, The Johns Hopkins University. Availabe at: http://www.umass.edu/digitalcenter/research/pdfs/JF_NetworkSociety.pdf (accessed 10 July 2011).

Castells M, Fernandez-Ardevol M, Qiu JL and Sey A (2004) *The Mobile Communication Society. A cross-cultural analysis of available evidence on the social users of wireless communication technology.* A research report prepared for the International Workshop on Wireless Communication Policies and Prospects: A Global Perspective, held at the Annenberg School for Communication, University of Southern California, Los Angeles, October 8th and 9th 2004. Available at: http://www.scribd.com/doc/6639987/Social-Uses-of-Wireless-Communications-the-Mobile-Information-Society-By-Manuel-Castells (accessed 7 July 2011)

Castells M and Godard F (1974) *Monopolville. Analyse des rapports entre l'entreprise, l'État et l'urbain à partir d'une enquête sur la croissance industrielle et urbaine de la région de Dunkerque*. (Avec la collaboration de Vivian Balanowski). Paris: Mouton.

Castells M and Ince M (2003) *Conversations with Manuel Castells*. Cambridge, UK: Polity Press.

Castells M and Murphy K (1982) Cultural Identity and Urban Structure: The Spatial Organization of San Francisco's Gay Community. In: Fainstein NI and Fainstein SS (eds) *Urban Policy under Capitalism*. Beverly Hills, CA: Sage.

Cochrane AD (2003) The Social Construction of Urban Policy. In: Bridge G and Watson S (eds) *A Companion to the City*. Oxford: Blackwell.

Collins S (1999) Finding the Event Horizon along the Black Holes of Network Society. Review of Castells, Manuel, The Rise of Network Society, Castells, Manuel, The Power of Identity and Castells, Manuel, End of Millennium. *H-USA, H-Net Reviews in the Humanities & Social Sciences*, September, 1999. Available at: http://www.h-net.org/reviews/showrev.php?id=3399 (accessed 10 July 2011).

Craven P and Wellman B (1973) The Network City. *Sociological Inquiry* 43: 57-88.

Damasio A (1994) *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Avon Books.

Delfanti A (2009) Too much power to the networks. Review. *Journal of Science Communication* 8(4): 1-2. Available at: http://jcom.sissa.it/archive/08/04/Jcom0804%282009%29R01/Jcom0804%282009%29R01.pdf (accessed 30 May 2011).

De Moura Costa HS (2007) Some theoretical formulations on the production of popular residential land developments in Belo Horizonte, Brazil. *etc…, espaço, tempo e crítica*, Revista Eletrônica de Ciências Sociais Aplicadas e outras coisas, 2(3), vol 1: 21-37. Available at: http://www.uff.br/etc/UPLOADs/etc%202007_2_3.pdf (accessed 10 July 2011).

Dunleavy P (1977) Protest and quiescence in urban politics. *International Journal of Urban and Regional Research* 1(1-4): 193–218.

Dunleavy P (1980) *Urban Political Analysis: the Politics of Collective Consumption*. London: Macmillan.

Elliott B (1980) Manuel Castells and the New Urban Sociology. *The British Journal of Sociology* 31(1): 151-158.

Entman RM (1993) Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication* 43(4): 51-58.

Eriksson K (2005) On the Ontology of Networks. *Communication and Critical/Cultural Studies* 2(4): 305-323.

Fischer J (1999) Manuel Castells' Brave New World. Reprinted from *West*, April 11, 1999, 17. Available at: http://www.acturban.org/biennial/DOC_planners/castells_article9904.pdf (accessed 5 July 2011).

Freeman LC (2004) *The development of social network analysis: a study in the sociology of science.* Vancouver, BC: Empirical Press.

Fuchs C (2008) *International Sociological Association (ISA) World Forum: Day 2: Alain Touraine, Manuel Castells, Craig Calhoun*. Information – Society – Technology & Media. Posted September 7, 2008. Available at: http://fuchs.uti.at/195/ (accessed 2 August 2011).

Fuchs C (2009) Some Reflections on Manuel Castells' Book 'Communication Power'. *TripleC: Communication, Capitalism & Critique* 7(1): 94-108.

Fuchs C (2012) Some Reflections on Manuel Castells' Book Networks of Outrage and Hope: Social Movements in the Internet Age. *TripleC: Communication, Capitalism & Critique* 10(2): 775-797.

Fuller S (2004) Manuel Castells' Trilogy The Information Age: Economy, Society and Culture. Book Review. *cyRev: A Journal of Cybernetic Revolution, Sustainable Socialism, and Radical Democracy*, Issue 8 - Winter 2004. Available at: http://www.net4dem.org/cyrev/archive/issue8/articles/CastellsReview/CastellsReview1.htm (accessed 30 May 2011)

Giddens A (1992) *The Consequences of Modernity*. Cambridge, UK: Polity Press.

Giddens A (1996) *Out of place*. A Review of Manuel Castells' Book 'The Rise of the Network. Society'. The Times Higher Education Supplement (London), 13th December 1996, 18.

Granovetter MS (1973) The Strength of Weak Ties. *The American Journal of Sociology* 78(6): 1360–1380.

Granovetter MS (1983) The Strength of Weak Ties: A Network Theory Revisited. *Sociological Theory* 1: 201-233.

Gurr TR and King D (1987) *The State and the City*. London: Macmillan.

Harding R (2006) Manuel Castells' Technocultural Epoch in The Information Age. *Science Fiction Studies* 33(1): 18-29.

Harris M (2010) Complexities and contradictions of networked places. *City* 6(3): 407-409.

Hassan R (2004) *Media, Politics and the Network Society*. Buckingham: Open University Press.

Heiskala R (2003) Informational revolution, the net, and cultural identity. A conceptual critique of Manuel Castells' "The Information Age". *European Journal of Cultural Studies*, 6(2): 233–245.

Hiltz SR and Turoff M (1978) *The Network Nation: Human Communication via Computer*. Reading M.A.: Addison-Wesley.

Holton RJ (2005) Network discourses: proliferation, critique and synthesis. Review Essay. *Global Networks* 5(2): 209-215.

Howard PN (2011) *Castells and the Media*. Cambridge: Polity Press.

Hydén H (2001) Manuel Castells och förebådandet av en ny rättskultur. *Retfaerd* 24(94): 3-19. Available at: http://www.retfaerd.org/gamle_pdf/2001/3/Retfaerd_94_2001_3_s3_19.pdf (accessed 10 July 2011).

Institute of International Studies (2001) *Identity and Change in the Network Society. Conversation with Manuel Castells*. Conversations with History: Institute of International Studies, UC Berkeley, 9 May 2001, interviewed by Harry Kreisler. Available at: http://globetrotter.berkeley.edu/people/Castells/castells-con0.html (accessed 5 July 2011).

Iyer SD (1999) Book Review: The Rise of the Network Society. *Solstice: An Electronic Journal of Geography and Mathematics* X:1. Ann Arbor: Institute of Mathematical Geography. Available at: http://hdl.handle.net/2027.42/60263 (accessed 10 July 2011).

Kasvio A (2005) What Information Society? In: Kasvio A and Anttiroiko A-V (eds) *e-City. Analysing Efforts to Generate Local Dynamism in the City of Tampere*. Tampere: Tampere University Press, pp. 619-643.

Katznelson I (1981) *City Trenches: Urban Politics and the Patterning of Class in the United States*. New York: Pantheon Books.

Katznelson I (1992) *Marxism and the City*. Oxford: The Clarendon Press.

Kelly K (1994) *Out of Control: The Rise of Neo-Biological Civilization*. Reading, MA: Addison-Wesley.

Kling JM and Posner P (1991) Class and Community: Theories of Activism in an Era of Urban Transformation. In: Smith MP (ed) *Breaking chains: social movements and collective action*. Comparative Urban and Community Research, Vol. 3. New Brunswick, NJ: Transaction Publishers.

Kling R (2002) The Internet Galaxy: Reflections on the Internet, Business, and Society. Book Reviews. *Academe Online*, July-August 2002. Available at: http://www.aaup.org/AAUP/pubsres/academe/2002/JA/BR/Klin.htm (accessed 20 July 2011).

Kumar K (2005) *From Post-Industrial to Post-Modern Society: New Theories of the Contemporary World*. Second Edition. Malden, MA: Blackwell.

Lakoff G (2008) *The Political Mind: Why You Can't Understand 21st-Century American Politics with an 18th-Century Brain*. New York: Viking Penguin.

Lash S and Urry J (1994) *Economies of Signs and Space*. London: Sage.

Lehmann N, Qvortrup L and Walther BK (eds) (2007) *The Concept of the Network Society: Post-Ontological Reflections*. Frederiksberg, Denmark: Samfundslitteratur.

Lojkine J (1976) Contributions to a Marxist theory of urbanization. In: Pickvance C (ed) *Urban sociology: Critical essays*. London: Tavistock.

Lowe S (1986) *Urban Social Movements. The City after Castells*. Houndmills: Macmillan.

Marcuse H (1964) *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Boston: Beacon.

Martin J (1977) *The Wired Society: A Challenge for Tomorrow*. Englewood Cliffs, NJ: Prentice-Hall.

May C (2006) The Network Society. Key Concepts Series. By Darin Barney. Reviews. *Canadian Journal of Communication* 31(3): 769-770. Available at: http://www.cjc-online.ca/index.php/journal/article/view/1659/1801 (accessed 6 June 2011).

Mayer M (2006). Manuel Castells' The City and the Grassroots. *International Journal of Urban and Regional Research* 30: 202–206.

McCarthy H, Miller P and Skidmore P (2004) *Network Logic. Who governs in an interconnected world?* London: Demos.

Merrifield A (2002) *Metromarxism. A Marxist Tale of the City*. London and New York: Routledge.

Mills CW (1959) *The Sociological Imagination*. Oxford: Oxford University Press.

Mollenkopf JH and Castells M (eds) (1991) *Dual City. Restructuring New York*. New York: Russell Sage Foundation.

Naisbitt J (1984) *Megatrends. Ten New Directions Transforming Our Lives*. Macdonald & Co., 1982. Futura edition. London: Futura.

Pescosolido BA (2012) The Sociology of Social Networks. In: Bryant CD and Peck DL (eds) *The Handbook of 21st Century Sociology*. Thousand Oaks, CA: Sage, pp. 208-217.

Pickvance CG (1975) Review Essay: Toward a Reconstruction of Urban Sociology. *American Journal of Sociology* 80(4): 1003-1008.

Portes A, Castells M and Benton LA (eds) (1989) *The Informal Economy: Studies in Advanced and Less Developed Countries*. Baltimore: The Johns Hopkins University Press.

Rantanen T (2005) The message is the medium. An interview with Manuel Castells. *Global Media Communication* 1(2): 135-147.

Rex J (1977) Sociological Theory and the City - A Response to Some Recent Trends in Australasian Urban Sociology. *Journal of Sociology* 13(3): 218-223.

Schiller D (2000) *Digital Capitalism: Networking the Global Market System.* Cambridge, MA: MIT Press.

Smart B (2000) A Political Economy of New Times? Critical Reflections on the Network Society and the Ethos of Informational Capitalism. *European Journal of Social Theory* 3(1): 51-65.

Stalder F (1998) The Network Paradigm: Social Formations in the Age of Information. Review Essay. *The Information Society* 14(4). Available at: http://www.indiana.edu/~tisj/readers/full-text/14-4%20Stalder.html (accessed 7 June 2011)

Stalder F (2006) *Manuel Castells and the Theory of the Network Society*. Cambridge: Polity Press.

Stehr N (1994) *Knowledge Societies*. London: Sage.

Tampere K (2011) A Walk in the Public Relations Field: Theoretical discussions from a social media and network society perspective. *Central European Journal of Communication* 4(1): 49-61.

Thompson GF (2003) *Between hierarchies and markets: the logic of network forms of organization*. Oxford: Oxford University Press.

Toffler A (1970) *Future Shock*. New York: Bantam Books.

Toffler A (1980) *The Third Wave*. New York: Bantam Books.

Toffler A (1990) *Powershift: Knowledge, Wealth and Violence at the Edge of the 21st Century*. New York: Bantam Books.

Walton J (1993) Urban Sociology: The Contribution and Limits of Political Economy. *Annual Review of Sociology* 19: 301-320.

Waterman P (1999) The Brave New World of Manuel Castells: What on Earth (or in the Ether) is Going On? Review Article. *Development and Change* 30(2): 357–380.

Webster F (1995) *Theories of the Information Society*. London: Routledge.

Wellman B (1979) The Community Question: The Intimate Networks of East Yorkers. *American Journal of Sociology* 84: 1201-1231.

Whiteley P (1980) Review of Manuel Castells' City, Class and Power. *Journal of Social Policy* 9(1): 135-137.

Wilenius M (1998) A New Globe in the Making: Manuel Castells on the Information Age. Review Essay. *Acta Sociologica* 41: 269-276.

Wright EO (1997) *Class Counts: Comparative Studies in Class Analysis*. Cambridge: Cambridge University Press.

Wright EO (2005) *Approaches to Class Analysis*. Cambridge, UK: Cambridge University Press.

Van Dijk J (1999) *The Network Society: Social aspects of new media*. London: Thousand Oaks. New Delhi: Sage.

Van Dijk J (2001) The One-dimensional Network Society of Manuel Castells. A Review Essay. *Chronicle World*. 07-Jan-01. Available at: http://www.chronicleworld.org/archive/castells.htm (accessed 30 May 2011).

Van Dijk J (2009) *Review of Manuel Castells (2009), Communication Power. Oxford, New York: Oxford University Press*. Available at: http://www.utwente.nl/gw/mco/bestanden/CastellsCommunicationPowerReview.pdf (accessed 8 July 2011).